UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,697	04/05/2005	Sandra Hintz	5003073.059US1	9659

29737 7590 09/16/2009

SMITH MOORE LEATHERWOOD LLP
P.O. BOX 21927
GREENSBORO, NC 27420

EXAMINER	
GODENSCHWAGER, PETER F	

ART UNIT	PAPER NUMBER
1796	

NOTIFICATION DATE	DELIVERY MODE
09/16/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

phil.mccann@smithmoorelaw.com
lorna.selvaggio@smithmoorelaw.com
mary.garner@smithmoorelaw.com

Office Action Summary	Application No.	Applicant(s)	
	10/520,697	HINTZ ET AL.	
	Examiner	Art Unit	
	PETER F. GODENSCHWAGER	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14 and 16-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14 and 16-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/30/2009; 5/26/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 3, 2009 has been entered.

Information Disclosure Statement

The document entitled "Versuchsbericht von Dr. Markus Linsenbuhler und Dr. Francisco Javier Lopez Villanueva" cited on the IDS dated May 26, 2009 has not been considered as the reference is not in English, and there is no explanation as to the relevance of the document.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-6, 8-14, and 16-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "fine" in claim 1 is a relative term which renders the claim indefinite. The term "fine" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 5, 6, 8, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Qin et al. (US Pat. No. 5,985,434).

Regarding Claim 1: Qin et al. teaches a process of preparing a water-absorbent foam by forming an aqueous composition/solution in which a soluble polymer is dissolved in a solvent

comprising at least 30 weight percent water (Column 3, Lines 3 – 29 and Column 10, Lines 1 - 28). The soluble polymer may be, for example, polyacrylic acid (Column 3, Lines 37 – 67). The solution may further comprise a crosslinking agent and optional components, such as surfactants (Column 6, Line 63 - Column 7, Line 3; Column 10, Lines 36 - 38). A blowing agent is also added to the solution and subsequently initiated to form an absorbent foam (Column 10, Lines 1 – 7). Qin et al. further teaches that tiny air bubbles (fine inert gas bubbles) are included/dispersed to achieve an essentially uniform cell structure in the absorbent foam (13:28-35). Qin et al. further teaches that substantially all of the solvent/water trapped in the foam should be removed (adjusting the content of water) (Column 13, Line 57 - Column 14, Line 5). The recovered foam may subsequently undergo a further treatment in which the polymer is heated to a temperature between about 50˚C to about 250˚C to achieve a desired degree of crosslinking (Column 14, Lines 33 – 55).

Qin et al. does not explicitly teach that the foam comprises less than 15% by weight of water. However, it is common practice in the art to optimize the relative amounts of result effective variables such as water/solvent content of an absorbent foam (see MPEP 2144.05). At the time of the invention, a person of ordinary skill in the art would have found it obvious to adjust the water content of the absorbent foam to less than 15% by weight and would have been motivated to do so because Qin et al. teaches that substantially all of the solvent/water trapped in the foam should be removed (Column 13, Line 57 - Column 14, Line 5). Furthermore, Qin et al. teaches that the resultant foam should be between 95-100% by weight polymer, and that while insubstantial amounts of solvent/water may be present, the presence of any materials in the absorbent foam that are not the water-swellable, water-insoluble polymer will tend to reduce the

overall liquid absorbency capacity of the absorbent foam (Column 4, Lines 28-55). Therefore one of ordinary skill in the art would be motivated to reduce the amount of water/solvent to as close to 0% by weight as possible in order to maximize the absorbency of the foam.

Regarding Claim 2: Qin et al. teaches the process of Claim 1 wherein the polymer of the aqueous composition has a molecular weight of greater than about 10,000 g/mol (Column 4, Lines 19 - 27).

Regarding Claim 5: Qin et al. teaches a water-absorbent, foam-type polymer structure prepared from the process of Claim 1 (Column 3, Lines 3 – 29).

Regarding Claim 6: Qin et al. teach the polymer structure of Claim 5 may have an Absorbency Under Load value (i.e. the amount in grams of an aqueous solution, containing 0.9 weight percent sodium chloride, a gram of material can absorb under a load of about 0.3 pounds per square inch) of atleast about 10 grams per gram and up to about 100 grams per gram of absorbent foam (Column 7, Lines 48 – 54).

Regarding Claims 8 and 17: Qin et al. teaches a disposable absorbent composite product (chemical product) comprising the absorbent structure of Claim 5 positioned between a liquid-permeable top sheet and a back sheet (Column 15, Lines 50-65).

Regarding Claim 16: Qin et al. teach a disposable absorbent composite product (chemical product) comprising the absorbent structure of Claim 5 (Column 15, Lines 50-65)

Claims 3, 9, 10, 12-14, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Qin et al. (US Pat. No. 5,985,434) in view of Hänhle et al. (Intl. Pub. No. WO 00/52087, English language equivalent US Pat. No. 6,750,262 used for citation purposes).

Regarding Claim 3: Qin et al. renders obvious the process of Claim 1 as set forth above.

Qin et al. is silent regarding the foam liter weight of the final composition. However, Hähnle et al. also teach an absorbent foam prepared with a density preferably in the range of 0.05 to 0.5 g/cm^3 (50 – 500 g/l) (Column 17, Lines 61 – 62). At the time of invention, it would have been obvious to a person of ordinary skill in the art to add a blowing agent to the solution taught by Qin et al. such that the density of the foam product would fall in the range taught by Hänhle et al. The motivation would have been that absorbent foams with a density in the range taught by Hänhle et al. would be useful in applications such as hygiene articles (Hänhle et al. Column 19, Lines 7 – 14).

Regarding Claims 9, 10, and 14: Qin et al. renders obvious the process of Claim 1 including the step of heating the foam to cross-link and adjusting the water content to not more than about 15% by weight as set forth above,

Qin et al. does not expressly teach the process where the foamed composition is brought into contact with substrate and then heated to a temperature of from about 50 to about 300˚C. However, Hänhle et al. also teach a composite wherein an absorbent foam is applied to a substrate, such as a sheet composed of polymers, metals, nonwovens, fluff, tissues, woven fabric, natural or synthetic fibers, or other foams (Column 13, Lines 13 – 2- and 31 - 40). The composite then undergoes a heat-treatment at a temperature in the range of 20 to 180°C (Column 13, Lines 38 – 40 and 60- 62). According to Qin et al., heat-treating the polymer foam at a temperature between about 50 to 250°C will initiate crosslinking (Column 14, Lines 53 – 55). The polymeric foam may be immobilized on the substrate, for example when the two are joined together as a composite with a sandwich-like structure (Hänhle et al. Column 13, Lines 31 – 37).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to use the process taught by Hänhle et al. to form the composite taught by Qin et al. The motivation would have been that process taught by Hänhle et al. is useful in preparing composite materials suitable as diapers, sanitary towels, etc. (Hänhle et al.: Column 19, Lines 7 – 14).

Regarding Claims 12, 13, and 18: Qin et al. render the process of Claim 1 obvious as set forth above.

Qin et al. does not teach the process where a portion of the surface of the water-absorbent foam structure is brought into contact with a portion of the surface of the substrate and immobilized upon it. However, Hänhle et al. also teach a composite wherein an absorbent foam is applied to a substrate, such as a sheet composed of thermoplastic polymers such as polyethylene or polypropylene (Column 13, Lines 15 - 18 and 31 - 40). At the time of invention, it would have been obvious to a person of ordinary skill in the art to use the process taught by Hänhle et al. to form the composite taught by Qin et al. The motivation would have been that process taught by Hänhle et al. is useful in preparing composite materials suitable as diapers, sanitary towels, etc. (Hänhle et al.: Column 19, Lines 7 – 14).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Qin et al. (US Pat. No. 5,985,434) in view of Ishizaki et al. (US Pat. No. 6,001,911).

Qin et al. renders the process of Claim 1 obvious as set forth above.

Qin et al. do not expressly disclose a step in which the structure is smoothed. However, Ishizaki et al. also teach a method of making an absorbent resin in which a crosslinked polymer composition is prepared and then calendared, so that the resultant absorbent product has at least

one smooth surface (Abstract). Qin et al and Ishizaki et al. are analogous art as they are from the same field of endeavor, namely absorbent polymeric compositions. At the time of invention, it would have been obvious to a person of ordinary skill in the art to smooth the foam taught by Qin et al. The motivation would been that a foam with a smoothed surface would provide advantages such as comfort to the wearer of an article, for example a diaper, containing this foam.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Qin et al. (US Pat. No. 5,985,434).

Qin et al. teach a water-absorbent, foam-type polymer structure comprising a water-swellable, water-insoluble polymer such as polyacrylic acid (Column 3, Lines 3 – 67). The polymer is present in the absorbent foam in an amount between 50 weight percent to 100 weight percent, based upon the total weight of the polymer, any crosslinking agent and any other optional components present in the absorbent foam (Column 4, Lines 30 - 43). Qin et al. further teach crosslinking agents may be used in an amount of from about 0.01 weight percent to about 20 weight percent, based on the total weight of the polymer and crosslinking agent present in the absorbent foam (Column 6, Lines 45 - 52). Qin et al. additionally teach additives may be used in an amount of less than about 1 weight percent up to less than about 10 weight percent based upon the total weight of the polymer, any crosslinking agent and any other optional components present in the absorbent foam (Column 7, Lines 7 – 14). Qin et al. teach the polymer structure of may have an Absorbency Under Load value (i.e. the amount in grams of an aqueous solution, containing 0.9 weight percent sodium chloride, a gram of material can absorb under a load of

about 0.3 pounds per square inch) of at least about 10 grams per gram and up to about 100 grams per gram of absorbent foam (Column 7, Lines 48 – 54). Qin et al. further teaches that substantially all of the solvent/water trapped in the foam should be removed (Column 13, Line 57 - Column 14, Line 5).

Qin et al. does not explicitly teach that the foam comprises 0-15% by weight of water. However, it is common practice in the art to optimize the relative amounts of result effective variables such as water/solvent content of an absorbent foam (see MPEP 2144.05). At the time of the invention, a person of ordinary skill in the art would have found it obvious to adjust the water content of the absorbent foam to less than 15% by weight and would have been motivated to do so because Qin et al. teaches that substantially all of the solvent/water trapped in the foam should be removed (Column 13, Line 57 - Column 14, Line 5). Furthermore, Qin et al. teaches that the resultant foam should be between 95-100% by weight polymer, and that while insubstantial amounts of solvent/water may be present, the presence of any materials in the absorbent foam that are not the water-swellable, water-insoluble polymer will tend to reduce the overall liquid absorbency capacity of the absorbent foam (Column 4, Lines 28-55). Therefore one of ordinary skill in the art would be motivated to reduce the amount of water/solvent to as close to 0% by weight as possible in order to maximize the absorbency of the foam.

Qin et al. are silent regarding the absorption speed of the foam. Consequently, the Office recognizes that all of the claimed effects or physical properties are not positively stated by the reference(s). However, the reference(s) teaches all of the claimed ingredient(s) and process limitation(s). Therefore, the claimed effects and physical properties, i.e. an absorption speed of more than about 2 g/g/sec, would

implicitly be achieved by a composition with all the claimed ingredients. If it is the applicant's position that this would not be the case: (1) evidence would need to be provided to support the applicant's position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties with only the claimed ingredients and process steps.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Qin et al. (US Pat. No. 5,985,434) in view of Hänhle et al. (Intl. Pub. No. WO 00/52087, English language equivalent US Pat. No. 6,750,262 used for citation purposes) as applied to claim 9 above, and further in view of Brueggemann et al. (US Pat. No. 6,033,769).

Qin et al. in view of Hänhle et al. render the process of Claim 9 obvious as set forth above.

Qin et al. teach a process for preparing a composite but do not expressly disclose that templates are used during the application of the polymeric foam to a substrate. However, Brueggemann et al. also disclose a method for preparing a water-absorbent polymeric foam and then applying it to a substrate using a template (Column 3, Lines 41 – 49). Qin et al. and Brueggemann et al. are analogous art as they are from the same field of endeavor, namely water-absorbent polymeric foams. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use templates to form the foam composition taught by Qin et al. to a substrate. The motivation would been that the templates would be useful in applying the foam only within a specified area on the substrate (Brueggemann et al, Column 3, Lines 41 – 49).

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Qin et al. (US Pat. No. 5,985,434) in view of Chen et al. (US Pub. No. 2001/0024716).

Qin et al. renders the process of Claim 1 obvious as set forth above.

Qin et al. does not expressly teach that one or more of the blowing agents is selected from inorganic salts or organic compounds capable of decarboxylation. However, Chen et al. also teach an absorbent foam wherein the blowing agent used to prepare the foam may be a citric acid mixture (Paragraph 149). Qin et al. and Chen et al. are analogous art as they are from the same field of endeavor, namely water-absorbent foams. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use citric acid as a blowing agent in the foam taught by Qin et al. The motivation would have been that citric acid as a blowing agent provides advantages such as promoting both expansion and crosslinking of fiber additives in a foamable composition (Chen et al.: Paragraph 112).

Response to Arguments

Applicant's arguments May 4, 2009 have been fully considered but they are not persuasive.

Applicant's arguments concerning the newly added limitation to claim 1 that the foaming step is done by mechanical action or by the dispersion of an inert gas has been sufficiently responded to in the rejection above. Applicant further argues that Qin et al. include a step of freezing an aqueous polymer composition and not by means of mechanical action or by the

dispersion of an inert gas. However, as the process of the instant claims uses the language "comprising", the process of the instant claims does not exclude such a step.

Applicant argues that Qin et al. teaches that the absorbent foam must contain at least 21 wt% water. However, the passages cited by Applicant to support this assertion (Col 10, Line 23, Col 10, Lines 40-43, and Col. 10, Line 66 to Col 11, Line 3) are concerned with the *solution* from which the absorbent foam is produced and not the final absorbent foam itself. As set forth in the rejection of claim 1 above, Qin et al. further teaches that substantially all of the solvent/water trapped in the foam should be removed (adjusting the content of water) (Column 13, Line 57 - Column 14, Line 5). Furthermore, Qin et al. teaches that the resultant foam should be between 95-100% by weight polymer, and that while insubstantial amounts of solvent/water may be present, the presence of any materials in the absorbent foam that are not the water-swellable, water-insoluble polymer will tend to reduce the overall liquid absorbency capacity of the absorbent foam (Column 4, Lines 28-55).

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER F. GODENSCHWAGER whose telephone number is (571)270-3302. The examiner can normally be reached on Monday-Friday 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/
Supervisory Patent Examiner, Art Unit 1796

/P. F. G./
Examiner, Art Unit 1796
September 9, 2009